

Utah Department of Environmental Quality Division of Solid and Hazardous Waste Fact Sheet



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HAZARDOUS WASTE INCINERATION

Incineration destroys organic compounds contained in hazardous wastes and reduces the volume of the wastes by removing liquids.

The specific equipment used depends on the incinerator type and the physical and chemical characteristics of the wastes. Hazardous waste incinerators must have an operating permit from the Division of Solid and Hazardous Waste.

Waste Feed

Depending on the type of incinerator, wastes are fed in batches or in a continuous stream. Liquid wastes are often pumped and atomized into fine droplets that burn more easily. Solid wastes may be fed into the incinerator in bulk or in containers using a conveyor, a gravity system, or a ram feeder.

Combustion

As the wastes are heated, they are converted from solids or liquids into gases. The gases are mixed with air and pass through a hot flame. As the temperature rises, the organic compounds in the gases begin to break down

and recombine with oxygen to form carbon dioxide and water. Depending on the waste composition, other organic and inorganic compounds may form.

In most hazardous waste incinerators, combustion occurs in two combustion chambers. Combustion is completed in the secondary combustion chamber after the compounds have been converted to gases and mostly combusted in the first chamber.

Combustion Gas

Incineration produces gases and solids, in the form of ash and slag. Combustion gases are composed primarily of carbon dioxide and water, plus small quantities of carbon monoxide, nitrogen oxides, and smaller concentrations of organic and inorganic compounds.

Air Pollution Control

Following combustion, the combustion gases move through various devices that cool and cleanse the gases. A fan is typically used to pull the gases through the incinerator and air pollution control equipment.

Gases are cooled with a water mixture to reform any particulate matter. Acids can be removed with wet or dry scrubbers. Particulate matter can be removed with either dry (baghouse) or wet systems.

Operating Parameters

The three critical factors that determine the completeness of combustion in an incinerator are (1) the combustion chamber **temperature**; (2) the **time** wastes are maintained at high temperatures; and (3) the **turbulence**, or mixing, of the wastes and the air.

Residual Solids

Incineration ash is made up of carbon, salts, and metals. The exact composition depends on the waste burned. Ash must be managed as a hazardous waste.

Additional Information

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[HTTP://WWW.DEQ.STATE.UT.US/EQSHW/DSHW-1.HTM](http://WWW.DEQ.STATE.UT.US/EQSHW/DSHW-1.HTM)